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E.O. 10501, 5 Nov 1953; USNSWC ltr dtd 25 Feb 1975

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

REPORT NO. 587

MINE AND MINE COMPONENT TESTING
UNDER
TASK ASSIGNMENT NPG-33 Re6b-3[illegible]

17th Partial Report

AIRCRAFT DROPS OF REEFED PARACHUTE MK 12 ASSEMBLED ON MINE MK 25 MOD 1

1st Partial Report

Task Assignment NPG-33-Re6b-3[illegible]

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(14) NPG [redacted] 587

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DAHLGREN, VIRGINIA

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(21) [redacted] Partial Report, no. 17
on
Mine and Mine Component Testing
under
Task Assignment NPG-33-Re6b-311-1

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(9) [redacted] Partial Report, no. 1,
on
(6) Aircraft Drops of Reefed Parachute, Mk. 12 [redacted] A
Assembled on Mine, Mk. 25 Mod. 1.

elb

(10) E. B. Hill

JUL 20 1950

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(16) Project No.: NPG-33-Re6b-311-1

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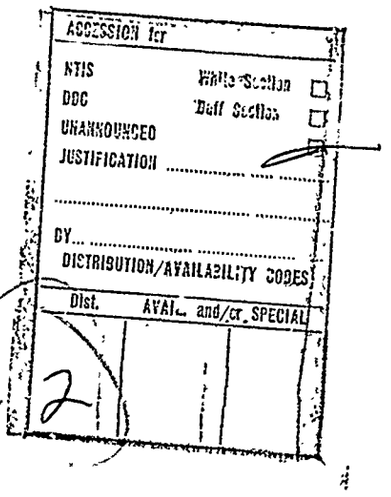
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TABLE I

TABULATED TEST DATA

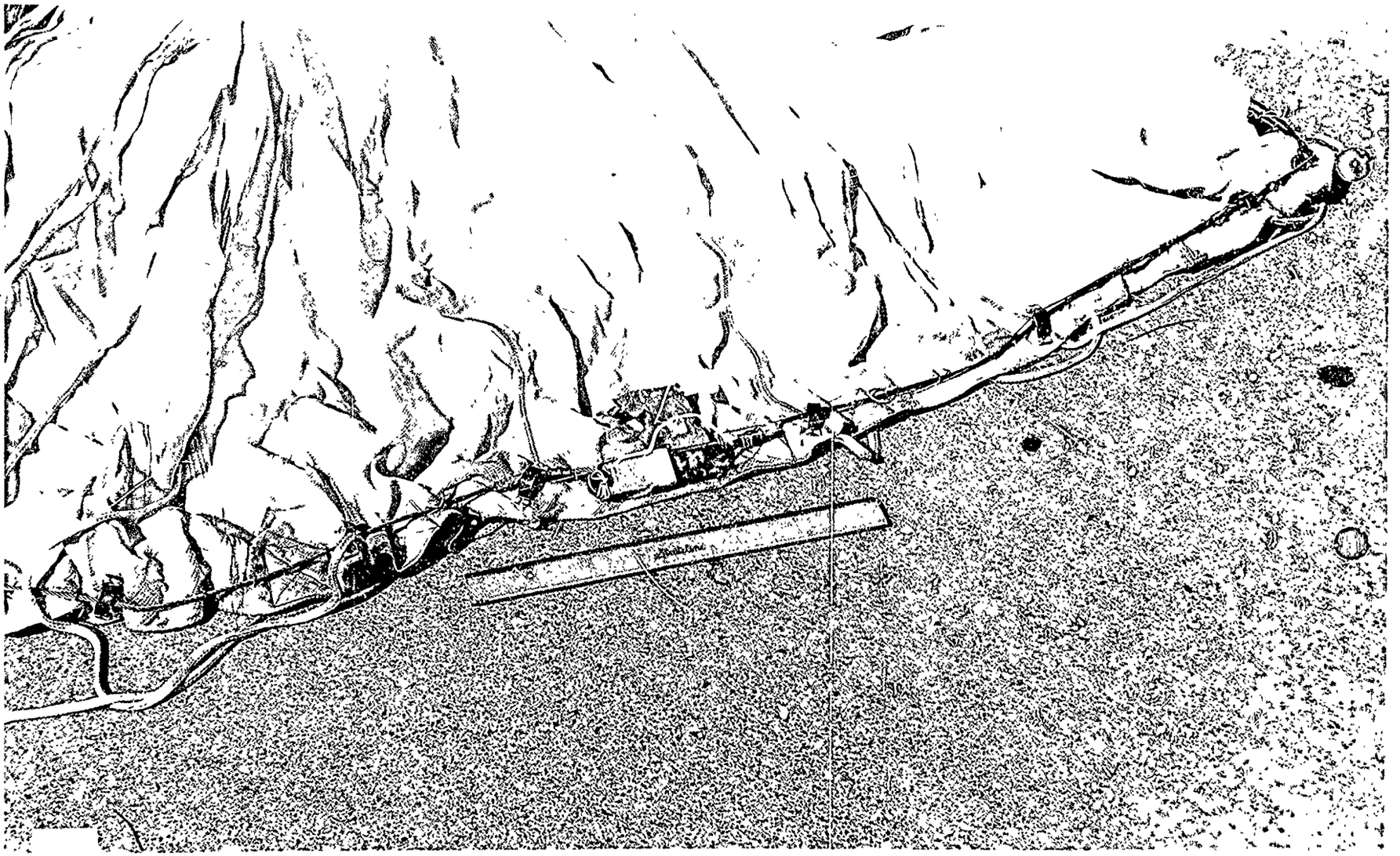
Aircraft Drops of Reefed Parachute, Mk. 12
Assembled on Mine, Mk. 25 Mod. 1
Launched from an F7F-3 type aircraft

Drop No.	Date	Calculated Altitude at Release (ft)	Airspeed at Release, knots true	Time from Release until Chute Fully Opens (sec.)	Remarks
1	10 April 1950	775	243	1.33	Satisfactory.
2	"	809	265	1.26	Satisfactory.
3	"	752	282	1.27	Satisfactory.
4	"	641	306	Did not open in flight.	Chute failed to stream. Opened on impact with ground.
5	"	862	337	Camera failed to get release	Chute delayed in opening. Good flight.
6	"	1400 feet*	350	1.26	Mine failed to release on first run. Dropped unit in river. Satisfactory flight.

*Indicated Altitude

NP9 41555 - Reefed Parachute, Mk. 12 Mod. 0 with a Baldwin-Deforest Strain Gage attached to the reefing line cable.

RESTRICTED 10 April 1950



Aircraft Drops of Reefed Parachute, Mk. 12
Assembled on Mine, Mk. 25 Mod. 1

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Aircraft Drops of Reefed Parachute, Mk. 12
Assembled on Mine, Mk. 25 Mod. 1

PART A

SYNOPSIS

1. This is the first partial report on Aircraft Drops of Reefed Parachute, Mk. 12, with strain gages, assembled on Mine, Mk. 25 Mod. 1, was conducted ~~under Task Assignment No. NPG-33-Re6b-311-1.~~

2. This test was conducted to determine the load applied to the reefing lines of the parachute on parachute opening and to assemble data necessary to compute distance vs. time curves on parachute openings.

3. It is concluded that:

a. Drops Nos. 1, 2, 3, and 6 withstood true launching speeds of 243, 265, 282, and 350 knots, respectively. The flight characteristics and parachute performance on each drop were satisfactory.

b. Drop No. 4 was unsatisfactory. The parachute failed to stream. It is believed the parachute was retained in the parachute pack by a bent center stud.

c. Drop No. 5 had a delayed parachute opening time of approximately 3 seconds.

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Aircraft Drops of Reefed Parachute, Mk. 12
Assembled on Mine, Mk. 25 Mod. 1

TABLE OF CONTENTS

Aircraft Drops of Reefed Parachute, Mk. 12
Assembled on Mine, Mk. 25 Mod. 1

PART B

INTRODUCTION

1. AUTHORITY:

This test was directed by reference (a) and was conducted under Task Assignment No. NPG-33-Re6b-311-1 authorized by reference (b). Reference (a) requested that the test be conducted in accordance with the outline in reference (c). Reference (d) requested additional data to obtain distance vs. time curves of parachute openings on the subject mine drops.

2. REFERENCES:

a. NOL restr speed ltr NP51/F43-1(1-298) Ser. 1661 of 19 December 1949.
b. BUORD conf ltr NP9(Re6b) of 3 September 1948.
c. NOL TSS No. 5929.
d. NOL restr speed ltr NP51/F43-1(1-301) Ser. 41 of 4 January 1950.

3. BACKGROUND:

This test is part of a design test program to develop a parachute capable of withstanding opening shock at high launching speeds.

4. OBJECT OF TEST:

Six reefed Parachutes, Mk. 12 Mod. 0, housed in Parachute Packs, Mk. 13 Mod. 0, and assembled on inert Mines, Mk. 25 Mod. 1, were air dropped to determine:

a, Load applied to reefing line cable.

b. stance vs. time curve on parachute opening.

5. PERIOD OF TEST:

a.	Date of Project Letter	4 January 1950 19 December 1949
b.	Date Necessary Material Received	3 January 1950
c.	Date Commenced Test	20 January 1950
d.	Test Completed	10 April 1950

6. REPRESENTATIVE PRESENT:

L. C. Ripley — Naval Ordnance Laboratory

PART C

DETAILS OF TEST

7. DESCRIPTION OF ITEM UNDER TEST:

a. The Parachute, Mk. 12 Mod. 0, is a single parachute constructed of 8 oz. nylon. The parachute is hamispherical in shape, similar to the Parachute, Mk. 2 Mod. 3. The principal difference is that the Mk. 12 Mod. 0 Parachute is 9 feet in diameter at the hemline rather than 6 feet. For this test the subject parachutes were reefed to 40% of their diameter by means of a steel reefing cable.

b. The Parachute, Mk. 12 Mod. 0, was housed in Parachute Pack, Mk. 13 Mod. 0 (modified).

c. The reefing lines were attached by three methods. In packs 1, 2 and 3, the reefing lines were run through the hemline. In packs 4 and 5 the reefing lines were run through steel grommets sewn to the hem at the shroud line attachment points. Brass grommets were used in a similar manner on pack 6.

d. Strain gages manufactured by Baldwin-Deforest were installed on the reefing line of each parachute. This is shown in Figure 1.

e. Parachute Packs were assembled on plaster loaded mine cases, Mk. 25 Mod. 1, by means of attaching bands constructed according to Naval Ordnance Laboratory Sketch 93515.

Aircraft Drops of Reefed Parachute, Mk. 12
Assembled on Mine, Mk. 25 Mod. 1

8. DESCRIPTION OF TEST EQUIPMENT:

a. Mines were launched from an F7F-3 type aircraft.

b. One Mitchell Camera with 17 inch lens was used to photograph release, flight, and impact of each mine.

c. Instrumentation necessary to obtain time vs. distance data will be described in the final report of this project.

9. PROCEDURE:

a. Six Mines, Mk. 25 Mod. 1, with Parachutes, Mk. 12, attached were launched separately from the fuselage rack of an F7F-3 type aircraft in horizontal flight at the time of release. True airspeeds at release varied from 243 to 350 knots. Altitudes at release varied from 641 to 1400 feet.

b. The film from the Mitchell Camera was used to determine the flight characteristics and parachute performance for each drop.

10. RESULTS AND DISCUSSIONS:

a. The flight characteristics and parachute performance for Drops Nos. 1, 2, 3, and 6 were satisfactory. The parachute delayed in opening on Drop No. 5 for approximately 3 seconds. After chute opening the flight and parachute action were satisfactory. Drop No. 4 was unsatisfactory. The parachute failed to stream while the mine was in flight. The cause for this failure is not known but it is believed that the chute was held in the pack by a bent center stud. Due to a non-release which may have been a rack hangup, Mine No. 6 was not released over land. The mine was released over water and was not recovered.

b. The final report of this project will contain determination of the time vs. distance curves on parachute openings.

c. The strain gages that were attached to the reefing lines of the first five parachutes were returned to the Naval Ordnance Laboratory representative who will calibrate the gages and compile the results.

PART D

CONCLUSIONS

11. It is concluded that:

a. Drops Nos. 1, 2, 3, and 6 withstood true launching speeds of 243, 265, 282, and 350 knots, respectively. The flight characteristics and parachute performance on each drop were staisfactory.

b, Drop No. 4 was unsatisfactory. The parachute failed to stream. It is believed the parachute was retained in the parachute pack by a bent center stud.

c. Drop No. 5 had a delayed parachute opening time of approximately 3 seconds.

PART E

DISPOSITION OF MATERIAL

12. Five of the parachutes tested were recovered and returned to the Naval Ordnance Laboratory Representative.

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Aircraft Drops of Reefed Parachute, Mk. 12
Assembled on Mine, Mk. 25 Mod. 1

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PREPARED BY: E B Hall
E. B. HALL
Project Engineer

SUBMITTED: M B Harland
M. B. HARLAND
Lieutenant Commander, USN
Special Projects Officer

CONCUR: C Mauro
C. T. MAURO
Captain, USN
Experimental Officer

CONCUR: M P Bagdanovich
M. P. BAGDANOVICH
Captain, USN
Aviation Ordnance Officer

APPROVED: W. A. KITTS, 3rd
Rear Admiral, USN
Commander, Naval Proving Ground

C H Anderson
C. H. ANDERSON
Captain, USN
Ordnance Officer
By direction